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ABSTRACT

An analysis was made of the factors associated with the condition of developmental dyslexia in pupils who were tutored in a Title III-funded learning disability center. During the 2-year period from September 1967 through June 1969, approximately 200 pupils were involved each year in an intensive diagnosis and remediation program. The ratio of boys to girls was approximately 7 to 1, the mean age was about 10.5 years, and the mean IQ was about 98. The Metropolitan Reading Test (Upper Primary) and a diagnostic battery of informal instruments were administered. Despite the grade retention of over 75 percent of the pupils and the generally favorable educational and environmental conditions, they were reading on the average about 2 years below their actual grade placement. The 10 instructors who provided the clinic tutoring identified for each pupil factors which may have contributed to the reading disability. Factors associated with general immaturity and emotional problems were prevalent for most pupils; family pathology was third in importance. It was reported that the incidence of the condition of developmental dyslexia among the regional school population sampled in this study was less than 1 percent. Tables and references are included. (CM)

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AN INVESTIGATION OF THE INCIDENCE OF DEVELOPMENTAL DYSLEXIA AND SELECTED FACTORS ASSOCIATED WITH THE CONDITION: RESULTS OF A TWO YEAR STUDY

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This research was conducted as part of a comprehensive program of diagnosis and treatment provided by a regional Learning Disability Center. The project was funded by the U.S. Office of Education under provisions of Title III of the Elementary and Secondary Education Act of 1965 and initially sponsored by twenty school districts in Broome and part of Tioga Counties on the Southern Tier of New York State.

During the two year period from September 1967 through June 1969, approximately 200 pupils were involved each year in an intensive program of diagnosis and remediation. The pupils were referred from 14 school districts in 1967-68, and from 15 in 1968-69. They were drawn from 65 different school buildings (66 in 1968-69). The combined pupil population of the districts (kindergarten through grade twelve) was approximately 60,000.

Liason with the school districts was established through principals, school psychologists, or reading specialists. These school district representatives distributed the applications for service and screened all referrals. Criteria for participation in the program included a level of reading retardation of at least two years in grades three and above and one year in grades one and two; an intellectual rating within the normal range; ineligibility for participation in special classes,

such as those for the brain-injured; adequate visual and auditory skills; and the absence of severe emotional problems.

The diagnostic battery included informal instruments developed at the Center to evaluate skills of word identification (sight vocabulary and phonics), spelling and writing. The Metropolitan Reading Test (Upper Primary - for grade 2) was used to measure Word Knowledge and Reading. An interview schedule was applied by a social worker to obtain a variety of socioeconomic data. The diagnostic battery was administered by ten specialists under the supervision of the director. Additional staff included a school psychologist and consulting medical specialists from the disciplines of pediatrics, neurology, ophthalmology, and psychiatry.

Computer processing techniques were used to summarize and evaluate the data. The results reported herein are selected and relate primarily to an investigation of the incidence of developmental dyslexia and selected factors associated with the condition.

Sex

The distribution by sex for each year was as follows:

	1967-68		1968-69	
	N	%	N	%
Boys	177	87.6	154	88.5
Girls	25	12.4	20	11.5
	202	100.0	174	100.0

The ratio of boys to girls was approximately 7 to 1.

Age

The chronological age of the pupils at the time of the administration of the diagnostic battery was as follows:

	1967-68		1968-69	
	Mean	Range	Mean	Range
Boys	10.32	7.08-14.67	11.03	7.42-15.42
Girls	10.05	6.67-12.25	11.00	7.33-14.00
Total	10.29	6.67-14.67	11.03	7.33-15.42

The mean age of the total group for the 1968-69 year exceeded that of the 1967-68 group by almost nine months. Approximately 50 per cent of the pupils who comprised the earlier group continued in the program for the second year. They were again evaluated in September, 1968, and the data for the second year includes both new and old pupils.

Grade Level

The modal grade placement for each of the years is indicated below:

	Modal Grade	Range
1967-68	4	1-8
1968-69	5	1-9

Grade Retention

Approximately 75 per cent of the pupils who were evaluated in 1967-68 repeated at least one full grade. The corresponding figure for the 1968-69 year was 80 per cent. The great majority of those who repeated did so in grade one and, with considerably less frequency, in grade two.

Basal Reader Instructional Level

A variety of informal instruments, including an Informal Reading Inventory based on the New Basic Readers of the Scott, Foresman & Company series, was used to assign a basal reader instructional level. The results were as follows:

	1967-68			1968-69		
	N	Mean	Range	N	Mean	Range
Boys	177	2.36	1.0-6.3	153	2.24	1.0-5.3
Girls	25	2.68	1.0-5.3	17	2.63	1.0-4.7
Total	202	2.40	1.0-6.3	170	2.28	1.0-5.3

Numerical values were assigned to the basal levels in order to compute the data (PP - 1.0; P - 1.3; 1^2 - 1.7; 2^1 - 2.3; 2^2 - 2.7; 3^1 - 3.2; 3^2 - 3.7; etc.). The results indicated a relatively comparable level of achievement for both groups for each of the years. In both years the girls tended to perform higher than the boys. In comparison to the actual grade placement of the pupils, the extent of retardation in general appeared to be about two years. The basal reader instructional level for almost 50 per cent of the pupils in each of the years was no higher than grade one.

Intellectual Assessment

WISC evaluations were provided by psychologists in the school districts and by the staff psychologists at the Center. The results for the 1967-68 group were as follows:

WISC	N	Mean	S.D.
Verbal	123	97.12	11.4
Performance	122	101.58	14.76
Total	122	98.51	10.63

(Evaluations by: district psychologists - 64; staff psychologists - 58.)

The results for the 1968-69 group were somewhat lower but comparable. The mean level of intelligence of both groups was within the normal range and quite close to the mean of the Wechsler normative sample.

Contributing Factors

During the 1967-68 year 173 pupils were involved in a tutorial program for varying periods of time. Approximately 25% of the pupils received individual instruction, while 60% received instruction in groups of two and 10% in groups of three. Instruction was offered one hour per day on two alternate days of the week.

The ten instructors who provided the tutoring were asked to identify for each pupil factors which may have contributed to the disability. A form was prepared listing eleven categories, each of which could be designated as a major, minor or possible contributing factor. The data in Table 1 provides a distribution of the composite of responses for each factor.

Table 1.

Identification of Contributing Factors
by Instructional Staff

Per Cent of Pupils Identified with Each Factor

	1967-68 (N=173)	1968-69 (N=168)
1. General Immaturity	64.7	72.6
2. Low Intelligence	19.7	21.4
3. Emotional Problems	61.8	73.2
4. Family Pathology	36.4	39.9
5. Poor Instruction in previous schools	13.9	32.7
6. Sensory Deficiency	12.7	12.1
7. Perceptual Deficiency	17.3	16.7
8. Poor Socio-economic background	24.9	26.8
9. Neurological Disorders	11.6	18.4
10. General Physical Weakness	10.4	3.4
11. Other	6.4	16.1

Contributing factors associated with general immaturity and emotional problems were clearly prevalent for most pupils in both years. Family pathology was third in importance as a contributing factor.

Socioeconomic Status

The occupational status of the head of household was obtained for each family. Comparisons were made with the national distribution, using U.S. Bureau of the Census data. The results are presented in Table 2.

Table 2.

Occupational Status of Heads of Households of Pupils Enrolled in the Learning Disability Center

Occupational Category	Per Cent of Learning Center Families 1967-68	Per Cent of Learning Center Families 1968-69	Per Cent in the National Distribution (1960 data)
1. Professional & Technical	10.7	13.9	14.8
2. Managers, Officials & Proprietors	16.0	11.5	15.0
3. Clerical Workers	3.1	4.2	7.0
4. Sales Workers	3.8	4.8	5.8
5. Craftsmen & Foremen	26.7	26.5	20.6
6. Operatives	24.4	19.3	18.9
7. Non-Farm Labor	2.3	4.2	6.1
8. Private Household Workers	0.0	0.0	0.0
9. Other Service Workers	9.2	9.0	5.8
10. Farmers	1.5	1.8	4.0
11. Farm Laborers	0.0	0.0	1.9
12. No Response	0.0	0.0	0.0
13. Unemployed	2.3	(4.8)	(3.4)
Total	100.0	100.0	100.0
	(N=131)	(N=136)	

The socioeconomic status of the families of the pupils was roughly comparable to that of the national distribution. Similar results were found when comparisons were made with the occupationsl status of families in Broome County. The academic disabilities of the pupils did not appear to be primarily related to poor economic conditions.

Summary

The research tends to support the concept of developmental dyslexia. The pupils referred to the Center were of normal intelligence who experienced severe and persistent problems in the acquisition of the language arts skills. Despite the grade retention of many of the pupils, and generally favorable

educational and environmental conditions, they were reading on the average about two years below their actual grade placement. A variety of contributing factors were identified, particularly those associated with general immaturity and emotional problems. The disability appears to be relatively independent of the socioeconomic status of the family, since the proportion of pupils in different socioeconomic levels was quite comparable to that in the national distribution. The incidence of the condition among the regional school population sampled in this study was less than 1 per cent.

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